REMARKS

The foregoing amendments and the following remarks are submitted in response to the communication dated January 15, 2004.

The Examiner has objected to the specification because on page 25, line 11, "JAC" should be "JAK". Applicants have amended the specification to correct this. The Examiner has further objected to the title of the Application as not descriptive and requires a new title. The Examiner suggests the title "DB, the Receptor for Leptin". Applicants have above amended the title as requested by the Examiner.

Status of the Claims

Claims 21, 22, 24, 26-28, 34-48, 51, 52 and 67 are pending in the application. Claims 1-19, 25, 29-33, 49, 50, 53-66 and 68, which are withdrawn from consideration, have been canceled without prejudice. Claims 21, 22, 24, 27, 28, 34 and 67 have been amended in order to more particularly point out and distinctly claim that which Applicants regard as the invention. Support for the amended claims can be found generally through Applicants' specification.

Claim Objections

The Examiner objects to claims 21, 24, 27, 28 and 67 as they encompass non-elected inventions and requests appropriate correction. Applicants have above amended the claims to remove the encompassed non-elected inventions, without prejudice.

The Examiner objects to claim 27 because it is not in sequence compliance. Applicants have above amended claim 27 to refer particularly to the hybrid truncated receptor polypeptide of amino acids 28-805 of SEQ ID NO: 10, as suggested by the Examiner. Applicants have further above amended the specification to appropriately and consistently identify this hybrid receptor polypeptide. As stated by the Examiner at page 5 of the January 15, 2004 Office Action, Applicants assert and point out that this amendment does not constitute new matter.

In view of the foregoing amendments and remarks, Applicants submit that the Examiner's claim objections are obviated and should be withdrawn.

The Double Patenting Rejection

The Examiner has provisionally rejected claims 21, 22, 24, 26-28, 34-48, 51, 52 and 67 under the judicially created doctrine of obviousness type double patenting as being unpatentable over claims 29-31 of copending Application Serial No. 08/783,734("the '734 Application"). Applicants respectfully disagree and submit that, in as much as the pending claims in the instant Application cover nucleic acids coding on expression OB-Re, these are patentably distinct from the oligonucleotides hybridizable to OB-Re claimed in claims 29-31 of the copending '734 Application.

The 35 USC § 101 Rejection

Claim 28 has been rejected under 35 U.S.C. 101 as directed to non-statutory subject matter. Applicants have above amended independent claim 28 to refer particularly to "isolated" and assert that this rejection should now be properly withdrawn.

The Specification Fully Enables the Claimed Invention

Claims 21, 22, 24, 26-27, 34-48, 51, 52 and 67 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the art that the inventors, at the time the application was filed, had possession of the claimed invention. The Examiner asserts that the claims as written include nucleic acids encoding polypeptides comprising fragments and homologues, and encompass nucleic acids encoding polypeptides that vary substantially in length and also in amino acid composition. The Examiner states that the instant disclosure does not adequately support the scope of the claimed genus, under written description, which encompasses a substantial variety of subgenera. Applicants respectfully disagree and assert that Applicants have described and provided examples of soluble leptin receptors which support a genus claim. Applicants have described and provided the specific DNA and protein sequence for soluble receptor species OB-Re (SEQ ID NO:10) as well as the truncated variant of amino acids 28-805 of SEQ ID NO: 10. These species were isolated as a naturally occurring soluble receptor species, using procedures and methods detailed in the specification. The skilled artisan

could readily, and without undue experimentation, isolate additional species of the genus of such soluble receptor(s), including additional and related allelic variants thereof.

In view of the foregoing remarks, Applicants submit that the Examiner's rejections under 35 U.S.C. 112, first paragraph may properly be withdrawn.

Particularity and Distinctiveness of the Claims

The Examiner has rejected claims 24, 36, 38, 40, 42, 44, 46, 48 and 52 under 35 U.S.C. 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter applicant regards as the invention.

The Examiner rejects claims 24, 36, 38, 40, 42, 44, 46, 48 and 52 as indefinite in the term "hybridizes." Applicants have above amended independent claim 24 (from which all the remaining thus rejected claims depend) to refer to DNA which hybridizes under moderate stringency conditions.

Claims 21, 34, 35, 37, 39, 41, 43, 45, 47, 51 and 67 are rejected as indefinite in as much as the Examiner asserts that OB-Re recited in claims 21 and 67 is an arbitrary name. Applicants have above amended claims 21 and 67 to clarify and make definite OB-Re.

In view of the foregoing remarks and amendments, Applicants request that the Examiner's rejections under 35 U.S.C. 112, second paragraph, be withdrawn.

The 35 USC § 102 Rejection

Claims 22, 24, 26, 34, 48, 51 and 52 are rejected under 35 U.S.C. 102(e) as being anticipated by Tartaglia et al U.S. Patent No. 6,506,877, filed December 28, 1995. In particular, the Examiner states that Tartaglia et al. discloses a protein (SEQ ID NO: 2) that is 100% identical to amino acids 1-796 of SEQ ID NO: 10 of the instant invention and a nucleic acid (SEQ ID NO: 1) which is 98.9% identical to nucleotides 1-2443 of SEQ ID NO: 10. Applicants submit that Tartaglia et al. does not anticipate the soluble leptin receptor of the instant invention and claimed by Applicants. Anticipation is a question of fact. As defined by the Federal Circuit, "[t]o anticipate a claim a reference must disclose every element of the challenged claim and enable one skilled in the art to make the anticipating subject-matter." *PPG Industries, Inc. vs Guardian Industries Corp., 37 USPQ2d 1618 (Fed. Cir. 1996) (emphasis added).* Tartaglia et al

neither discloses every element of the rejected claims nor enables one skilled in the art to make the anticipating subject matter, specifically the soluble receptor of SEQ ID NO: 10 or the hybrid variant of SEQ ID NO: 10. SEQ ID NO: 2 of Tartaglia does not correspond to a soluble receptor, nor does it correspond in sequence to the soluble receptor(s) of the instant Application. As detailed in Tartaglia et al at page 6, lines 52-57, the deduced amino acid sequence (SEQ ID NO:2) of murine ObR protein has domains as follows:

> signal sequence (amino acid residues 1 to about 22), extracellular domain (from about amino acid residue 23 to about 837), transmembrane domain (from about amino acid residue 838 to about 860), and cytoplasmic domain (from about amino acid residue 861 to 894.

SEQ ID NO: 2 and the SEQ ID NO: 1 encoding SEQ ID No: 2 of Tartaglia thus is not a soluble receptor and in fact includes a transmembrane and cytoplasmic domain. Applicants further point out that, as described in the instant specification, including at page 86, lines 28-30, soluble receptor OB-Re (SEQ ID NO:10) predicts a different amino acid sequence after His^{796}. The Tartaglia sequence of SEQ ID NO:2 corresponds to SEQ ID NO: 10 up until His^{796}, as indicated by Applicants, but does not teach or anticipate the unique C-terminal sequence of SEQ ID NO:10. Further, this C-terminal sequence after His^{796} in Ob-Re is not even suggested by Tartaglia. In addition, Tartaglia describes an extracellular domain from about amino acid residue 837 and does not teach or anticipate, or even suggest, the end of natural DB sequence at amino acid His^{796} in a soluble receptor form. Tartaglia et al. does not teach or anticipate the soluble receptor(s) as claimed by Applicants.

In view of the foregoing remarks, Applicants submit that the Examiner's rejection under 35 U.S.C. 102 may properly be withdrawn.

CONCLUSION

Applicants respectfully request entry of the foregoing amendments and remarks in the file history of the instant Application. The Claims as amended are believed to be in condition for allowance, and reconsideration and withdrawal of all of the outstanding rejections is therefore believed in order. Early and favorable action on the claims is earnestly solicited.

Respectfully submitted,

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Complete Listing of Claims in Application U.S.S.N. 08/599,974

Claims 1-20 (cancelled)

21. (currently amended) An isolated nucleic acid encoding a soluble leptin receptor polypeptide which is ~~selected from the group consisting of OB-Ra, OB-Rb, OB-Rc, OB-Rd, and~~ OB-Re (SEQ ID NO:10), or allelic variants thereof.

22. (currently amended) An isolated nucleic acid encoding a leptin receptor (OB-R) polypeptide which is a soluble receptor.

Claim 23 (cancelled)

24. (currently amended) An isolated DNA molecule encoding on expression a soluble leptin receptor polypeptide selected from the group consisting of:

f. a DNA molecule of SEQ ID NO:~~1, 3, 5, 7, or~~ 9;

g. a DNA molecule complementary to the DNA molecule defined in (a);

h. a DNA molecule which hybridizes under moderate stringency conditions to the DNA molecule of (a) or (b), or a hybridizable fragment thereof which encode on expression a soluble leptin receptor;

i. a DNA molecule which is amplifiable with a polymerase chain reaction (PCR) probe selected from group consisting of a probe for clone 7 (forward primer SEQ ID NO:42 and reverse primer SEQ ID NO:43), a probe for clone 11 (forward primer SEQ ID NO:44 and reverse primer SEQ ID NO:45), and both clone 7 and clone 11; and

j. a DNA molecule that codes on expression for the soluble leptin receptor polypeptide encoded by any of the foregoing DNA molecules.

Claim 25 (cancelled)

26. (original) The DNA molecule of claim 24 which is murine.

27. (currently amended) The DNA molecule of claim 24 which codes on expression for a polypeptide selected from the group consisting of:

a) a leptin receptor selected from the group consisting of ~~OB-Ra (SEQ ID NO:2), OB-Rb (SEQ ID NO:4), OB-Rc (SEQ ID NO:6), OB-Rd (SEQ ID NO:8), and~~ OB-Re (SEQ ID NO:10), or allelic variants thereof; and

~~b) a leptin receptor selected from the group consisting of:~~

~~i. N-terminal corresponding to OB-Ra through Lys^{889} and C-terminal corresponding to a C-terminal selected from the group consisting of OB-Rb after Lys^{889} (SEQ ID NO:57), OB-Rc after Lys^{889} (SEQ ID NO:58), and OB-Rd after Lys^{889} (SEQ ID NO:59);~~

~~ii. N-terminal corresponding to OB-Rb or OB-Rc through Lys^{889}, and C-terminal corresponding to OB-Ra after Lys^{889} (SEQ ID NO:60,61) or OB-Rd after Lys^{889} (SEQ ID NO:62,63);~~

~~iii. N terminal corresponding to OB-Rd through Lys^{889}, and C terminal corresponding to OB-Ra after Lys^{889} (SEQ ID NO:64), OB-Rb after Lys^{889} (SEQ ID NO:65), or OB-Rc after Lys^{889} (SEQ ID NO:66);~~

~~iv. N terminal corresponding to SEQ ID NO:55 from Pro^{664} to Lys^{889}, and C terminal corresponding to OB-Ra after Lys^{889} (SEQ ID NO:67), OB-Rb after Lys^{889} (SEQ ID NO:68), OB-Rc after Lys^{889} (SEQ ID NO:69), and OB-Rd after Lys^{889} (SEQ ID NO:70);~~

~~v. N terminal corresponding to SEQ ID NO:55 from Met^{733} to Lys^{889}, and C terminal corresponding to OB-Ra after Lys^{889} (SEQ ID NO:71, OB-Rb after Lys^{889} (SEQ ID NO:72), OB-Rc after Lys^{889} (SEQ ID NO:73), and OB-Rd after Lys^{889} (SEQ ID NO:74);~~

~~vi. N terminal selected from the group consisting of OB-Ra, OB-Rb, OB-Rd, and SEQ ID NO:55 from Pro^{664}, through His^{796}, and OB-Re from His^{796} SEQ ID NO:75,76,77 and 78);~~

~~vii. N terminal corresponding to SEQ ID NO:55 from Met^{733} to His^{796}, and OB-Re from His^{796} (SEQ ID NO:79), and~~

~~viii.~~ iii. ~~allelic variants of any of subparts i) through vii) above;~~

~~c)~~ b) a leptin receptor comprising amino acids 28-805 of SEQ ID NO:10. ~~wherein~~

~~viii. the N-terminal sequence is selected from the group consisting of~~

~~(1) amino acid residues 1-889 (SEQ ID NO:80);~~

~~(2) amino acid residues 23-889 (SEQ ID NO:81);~~

~~(3) amino acid residues 28-889 (SEQ ID NO:82);~~

~~(4) amino acid residues 133-889 (SEQ ID NO:83);~~

~~(5) amino acid residues 733-889 (SEQ ID NO:84);~~

~~(6) amino acid residues 1-796 (SEQ ID NO:85);~~

~~(7) amino acid residues 23-796 (SEQ ID NO:86);~~

~~(8) amino acid residues 28-796 (SEQ ID NO:87);~~

~~(9) amino acid residues 28-796 preceded by an N-terminal Asp-Pro dipeptide (SEQ ID NO:88);~~

~~(10) amino acid residues 133-796 (SEQ ID NO:89);~~

~~(11) amino acid residues 733-796 (SEQ ID NO:90); and~~

~~(12) allelic variants of any of subparts (1) through (10) above; and~~

~~ix. the C-terminal sequence is selected from the group consisting of~~

~~(1) SEQ ID NO:11;~~

~~(2) SEQ ID NO:12;~~

~~(3) SEQ ID NO:13;~~

~~(4) SEQ ID NO:14; and~~

~~(5) SEQ ID NO:15 after His^{796} (SEQ ID NO:91);~~

~~wherein the numbering is based on the amino acid sequence of SEQ ID NO:55.~~

28. (currently amended) An isolated nucleic acid molecule having a nucleotide sequence corresponding or complementary to the DNA sequence set forth in SEQ ID NO:~~1, 3, 5, 7 or~~ 9.

Claim 29 (cancelled)

Claim 30 (cancelled)

Claim 31 (cancelled)

Claim 32 (cancelled)

Claim 33 (cancelled)

34. (currently amended) The nucleic acid of claim 21, 22, or 67~~-68~~ which is DNA.

35. (original) A vector comprising the DNA of claim 34.

36. (original) A vector comprising the DNA of claim 24, 27, or 28.

37. (original) An expression vector which comprises the DNA of claim 34, operatively associated with an expression control sequence.

38. (original) An expression vector which comprises the DNA of claim 24, 27, or 28, operatively associated with an expression control sequence.

39. (original) An unicellular host transformed or transfected with a DNA molecule of claim 34.

40. (original) An unicellular host transformed or transfected with a DNA molecule of claim 24, 27, or 28.

41. (original) An unicellular host transformed or transfected with an expression vector of claim 37.

42. (original) An unicellular host transformed or transfected with an expression vector of claim 38.

43. (original) The unicellular host of claim 41 selected from the group consisting of bacteria, yeast, mammalian cells, plant cells, and insect cells, in tissue culture.

44. (original) The unicellular host of claim 42 selected from the group consisting of bacteria, yeast, mammalian cells, plant cells, and insect cells, in tissue culture.

45. (original) The unicellular host of claim 43, wherein the unicellular host is selected from the group consisting of *E. coli, Pseudomonas, Bacillus, Streptomyces, Saccharomyces, Pichia, Candida, Hansenula, Torulopsis*, CHO, R1.1, B-W, LM, COS 1, COS 7, BSC1, BSC40, BMT10, and Sf9 cells.

46. (original) The unicellular host of claim 44, wherein the unicellular host is selected from the group consisting of *E. coli, Pseudomonas, Bacillus, Streptomyces, Saccharomyces, Pichia, Candida, Hansenula, Torulopsis*, CHO, R1.1, B-W, LM, COS 1, COS 7, BSC1, BSC40, BMT10, and Sf9 cells.

47. (original) A method for preparing a leptin receptor polypeptide comprising:
a) culturing a cell according to any claim 43 under conditions that provide for expression of the leptin receptor polypeptide; and
b) recovering the expressed polypeptide.

48. (original) A method for preparing a leptin receptor polypeptide comprising:
a) culturing a cell according to any claim 44 under conditions that provide for expression of the leptin receptor polypeptide; and
b) recovering the expressed polypeptide.

Claim 49 (cancelled)

Claim 50 (cancelled)

51. (original) A transgenic vector comprising a DNA molecule of claim 34.

52. (original) A transgenic vector comprising a DNA molecule of claim 24, 27, or 28.

Claim 53 (cancelled)

Claim 54 (cancelled)

Claim 55 (cancelled)

Claim 56 (cancelled)

Claim 57 (cancelled)

Claim 58 (cancelled)

Claim 59 (cancelled)

Claim 60 (cancelled)

Claim 61 (cancelled)

Claim 62 (cancelled)

Claim 63 (cancelled)

Claim 64 (cancelled)

Claim 65 (cancelled)

Claim 66 (cancelled)

67. (currently amended) The isolated nucleic acid of claim 22 wherein said soluble receptor is selected from the group consisting of

a) OB-Re (SEQ ID NO:10), or allelic variants thereof; and

b) a leptin receptor comprising amino acids 28-805 of SEQ ID NO:10. ~~an N-terminal sequence which is selected from the group consisting of:~~

~~i) OB-Ra;~~

~~ii) OB-Rb;~~

~~iii) OB-Rd; and~~

~~iv) corresponding to SEQ ID NO: 55 from Pro^{664}, through His^{796}, and a C-terminal sequence which is OB-Re from His^{796}; and~~

~~v) allelic variants of any of subparts i) through iv);~~

~~c) an N-terminal sequence which is selected from the group consisting of~~

~~i) amino acid residues 1-796;~~

~~ii) amino acid residues 23-796;~~

~~iii) amino acid residues 28-796;~~

~~iv) amino acid residues 133-796;~~

~~v) amino acid residues 733-796; and~~

~~vi) allelic variants of any of subparts i) through v); and~~

~~a C-terminal sequence which is SEQ ID NO:15;~~

~~wherein the numbering in subparts b) and c) is based on the amino acid sequence of SEQ ID NO:55.~~

Claim 68 (cancelled)